

Towards Post Industrial Vernacular Architecture

Mardin, Turkey (Middle East)

Sem 9 | A

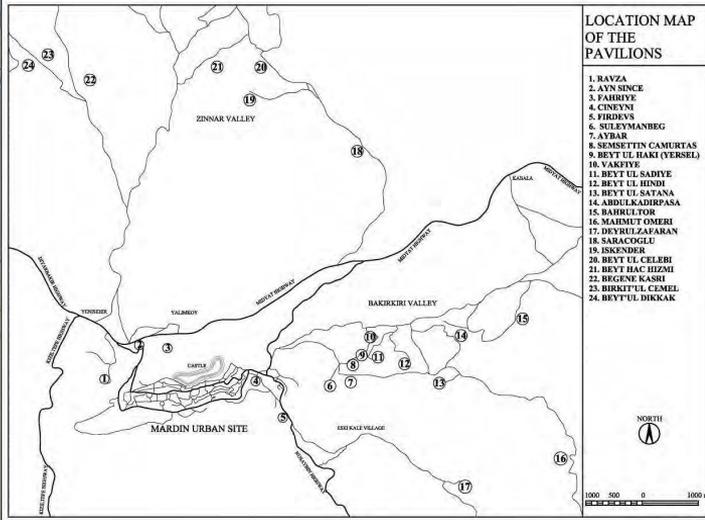
01 Parth Bane

16 Vaishnavi S Iyer

36 Niharika Shah



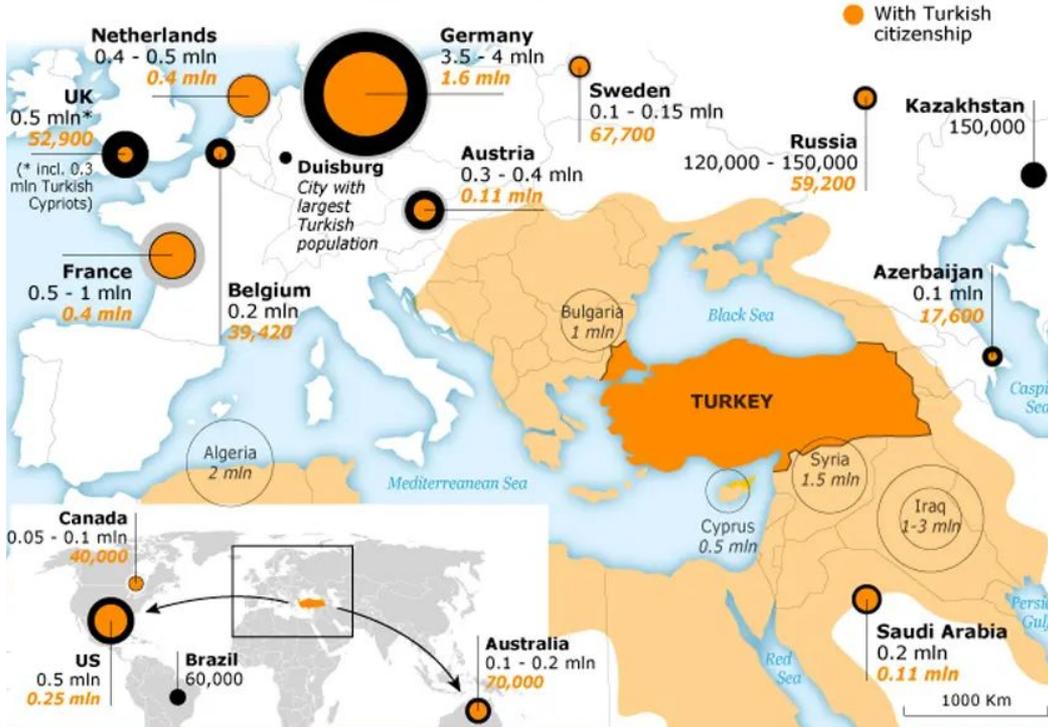
SITE AND ITS CHOICE | Origin of the Settlement



Mardin is located at the boundary of Mesopotamia, which we know as one of the first civilizations that came to existence. During their expansion and trade with the Anatolia region their path crosses through where Mardin is now, this might be the reason why the settlement started to grow in Mardin.

Turkish emigrants*

Main destinations of Turkish migrants in recent decades



* Several countries that used to be part of the Ottoman Empire still have large numbers of citizens of ethnic Turkish descent. Estimations of the largest numbers of ethnic Turks: Bulgaria (up to 1 mln), Iraq (1-3 mln), Algeria (up to 2 mln), Syria (up to 1.5 mln), and Cyprus (up to 0.5 mln).

The labour force in Turkey totals 46.9 million, of which **24.5 million are women**.

3.5 million are unemployed, and 500,000 young people enter the job market every year.

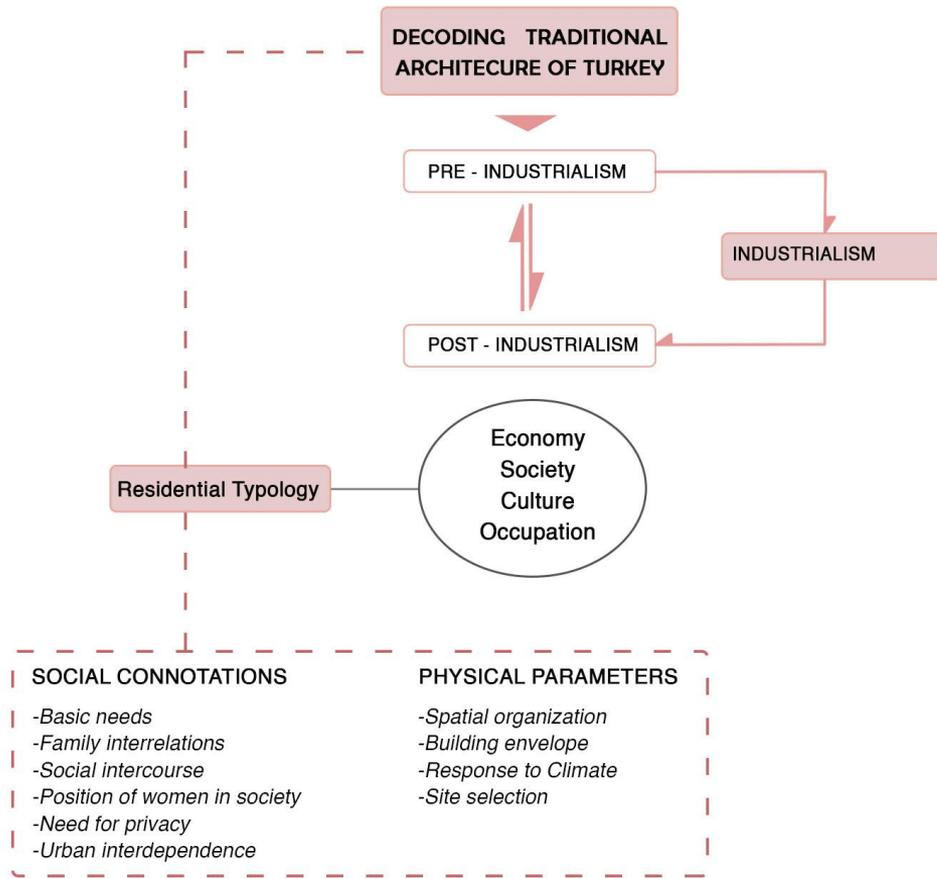
Official sources estimate the **participation of women in work at only 26%.**

Until the 1960s most exports were derived from agriculture, and most of the remainder consisted of minerals and raw materials; imports were mainly limited to machinery, transportation equipment, and manufactured goods.

The leading exports are **textile fibres, yarns, fabrics, and clothing, iron and steel, fruits and vegetables, livestock products, tobacco, and machinery.**

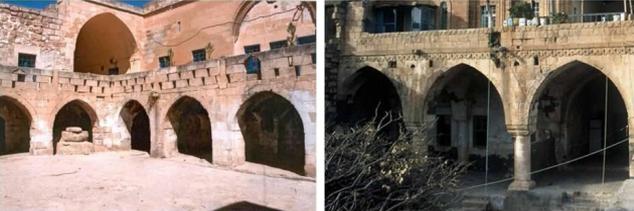
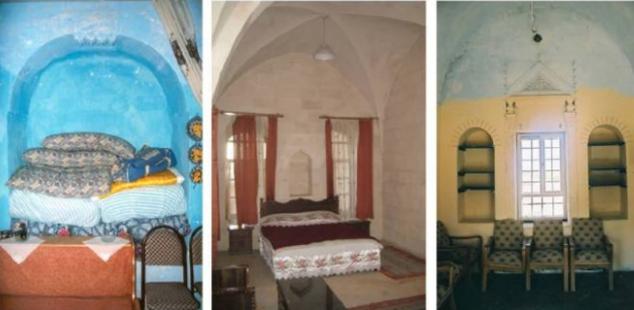
The major manufacturing employer is the textile industry. The biggest plants are in the cotton-growing districts of the Adana Plain and Büyükmenderes valley, but textile production also occurs in most regional centres.

POST INDUSTRIAL DESIGN FRAMEWORK



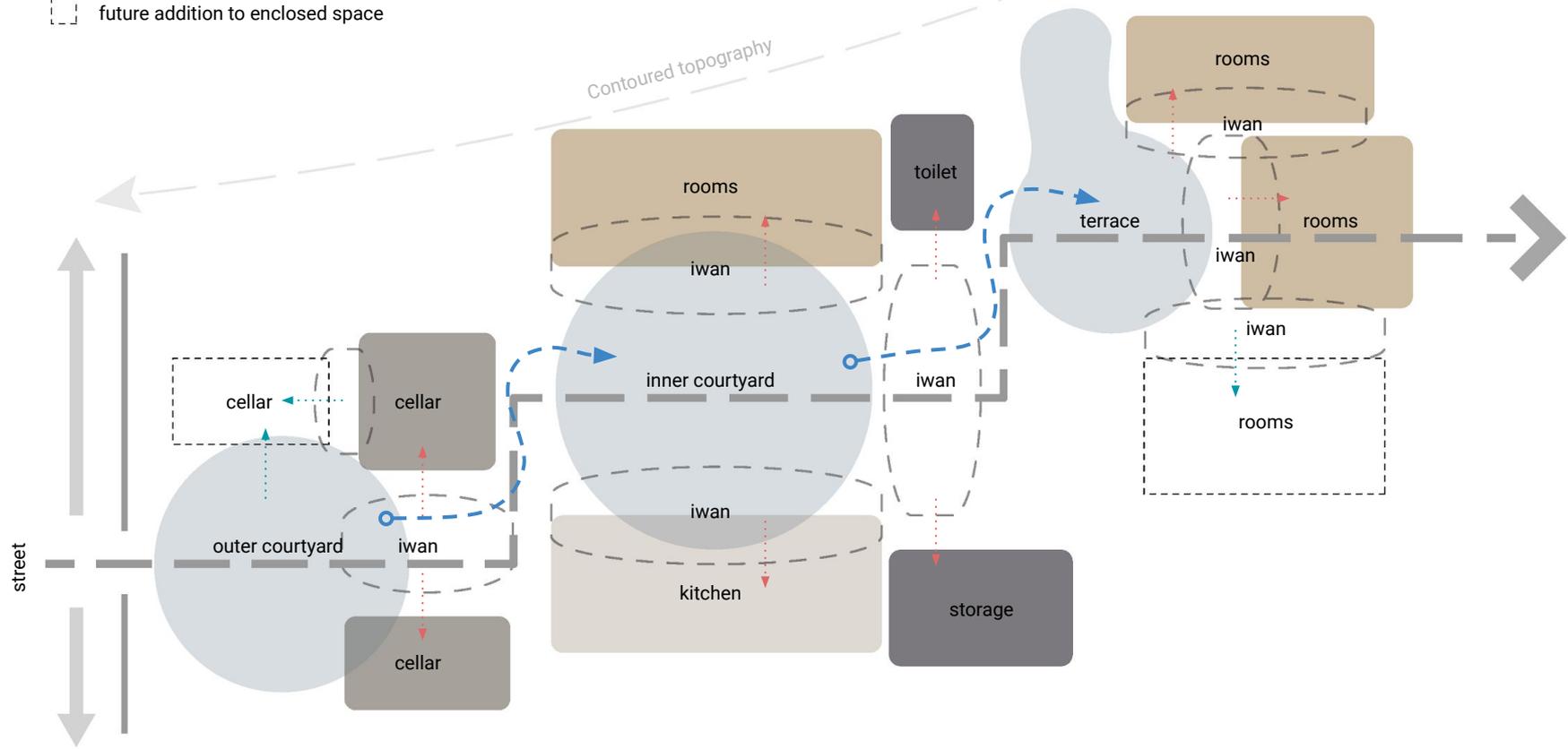
Tradition and Modernity in Turkey contemporary architecture approaches in 1940-1980

	Approach	Sample projects	traditionalist features	International features
Years of 1950-1940, the Second National Architectural Movement	Regionalism Architecture	Faculty of Language, History and Geography - Bruno Taut	The use of vernacular and traditional motifs Combining elements of traditional Ottoman houses architecture on the aesthetics principles of building	Following the principles of rational neoclassical architecture or monumental architecture in general form Taking advantage of modern principles and techniques in construction
		Faculty of Science and Literature in Istanbul Emin Onat, Sedad Eldem		
		Radio Istanbul - Atgular et al		
	Nostalgic Architecture	Turkish Pavilion at Expo New York - Sedad Eldem Eastern café- Sedad Eldem	The use of vernacular and traditional motifs The physical organization of building on the pattern of traditional houses Representation traditional functional patterns (central sofa, Chikma, etc).	Taking advantage of modern principles and techniques in construction
populist Architecture (Anatoly Vernacular Architecture)	Cenap house- Emin Onat The first Levent housing - Turgat and Ozden Kosuyolu -work of Aru and Gurbon	The use of vernacular and traditional motifs and traditional construction methods The physical organization of the building based on the pattern of traditional houses Representation of the traditional context in Anatoly		
Chauvinist Architecture	Mausoleum of Ataturk - Emin Onat, Orhan Arda	The use of ornaments and vernacular & traditional motifs with special attention to the architecture of the Hittites and Urarto Referring to the traditional behavior patterns Referring to the traditional	the representation of western classical architectural principles in physical organizing and Aesthetic principles Modern manufacturing techniques combined with traditional patterns	

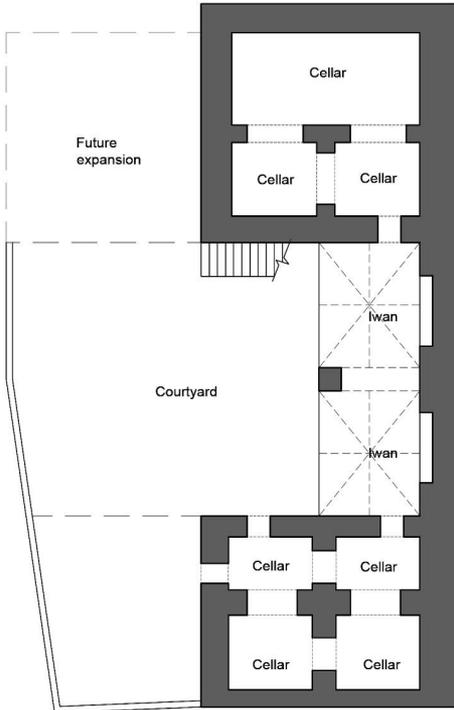
	Planning features	Activities	Images
<p>Open space <i>courtyard, terrace, roof</i></p>	<ol style="list-style-type: none"> 1. centre of the house 2. connects spaces 	<p>wedding ceremonies, condolences, engagements and most of the women's time is spent in this space</p>	
<p>Semi- open space <i>iwan, arcade, balcony</i></p>	<ol style="list-style-type: none"> 1. semi open spaces between two closed spaces 2. connects spaces 3. used during spring and summer months 	<p>hosting guests, sleeping, sitting, dining, preparing meals and hosting guests procedures</p>	
<p>Enclosed space <i>rooms, interstices</i></p>	<ol style="list-style-type: none"> 1. Guest room is bigger and more decorated than the others 2. Some rooms have stone seats; the shoes are taken off there 3. Room walls have covered or uncovered niches. 	<p>Rooms are the private spaces and used for sleeping and activities during the night</p>	

CONCEPTUAL ZONING

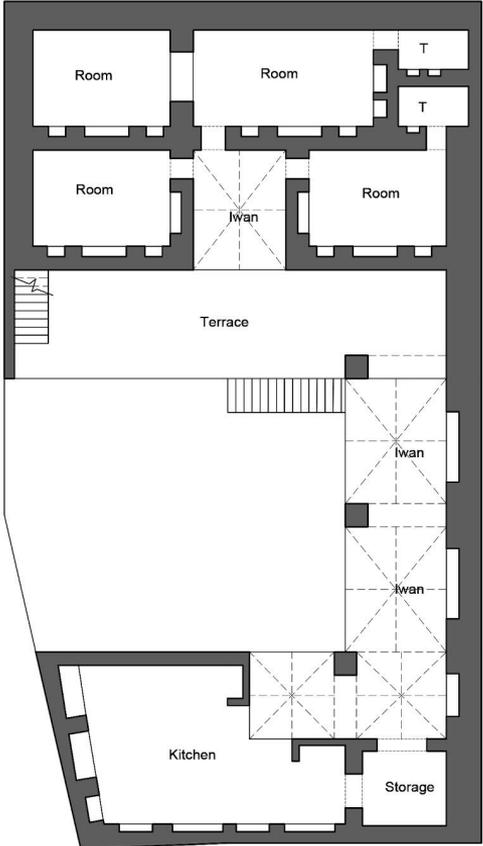
- open space
- semi-open space
- enclosed space
- future addition to enclosed space



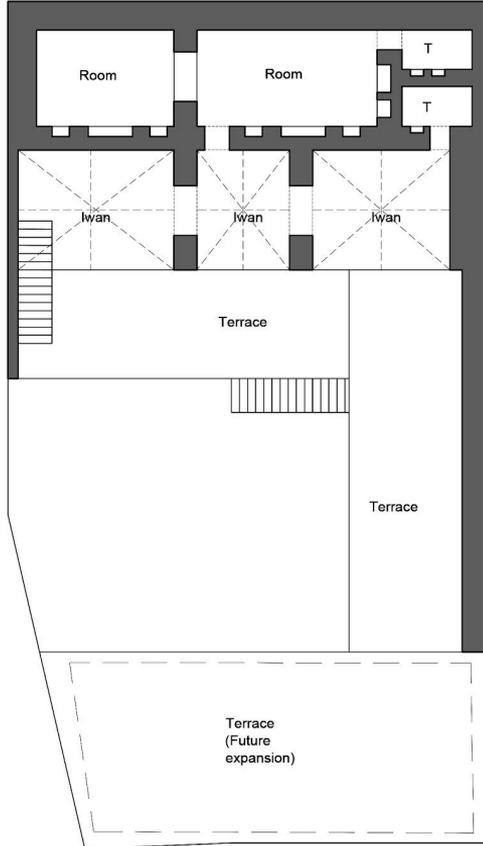
PROPOSED DESIGN | Plans



Ground Floor Plan



First Floor Plan



Second Floor Plan

PROPOSED DESIGN | Section

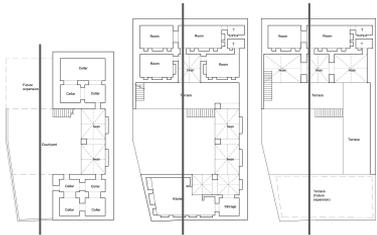
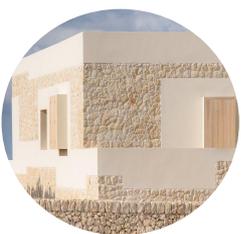
Dry-wall cladding



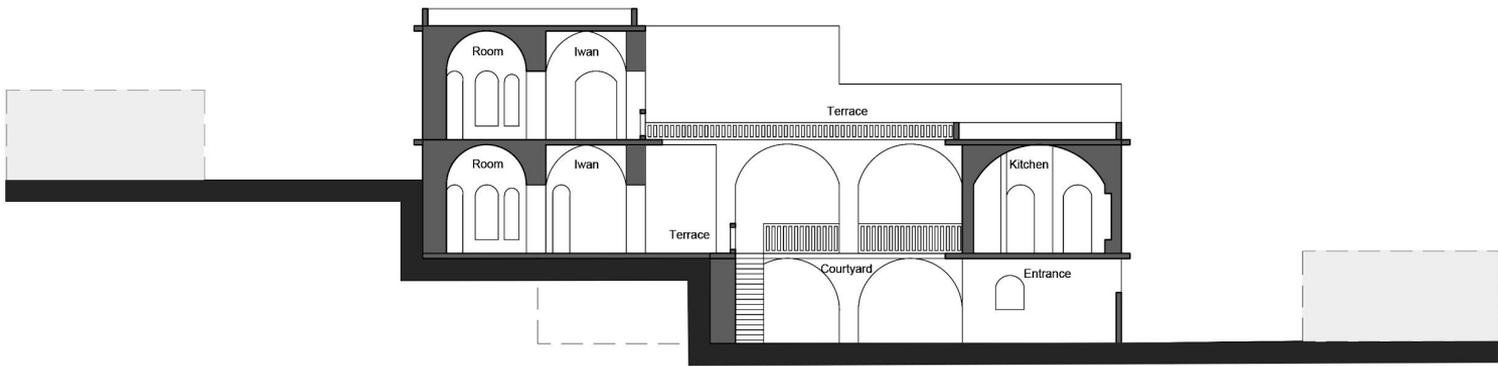
Wooden framing members



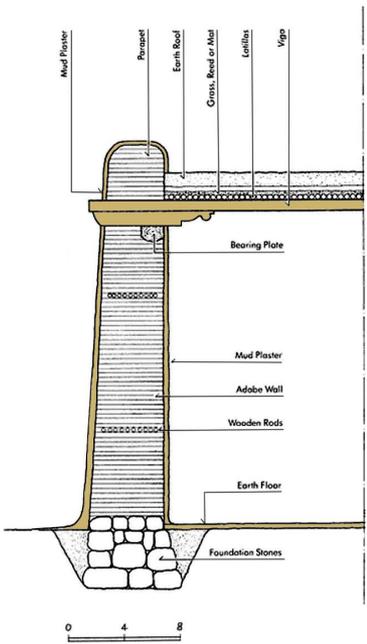
Solid limestone external wall



Key plan



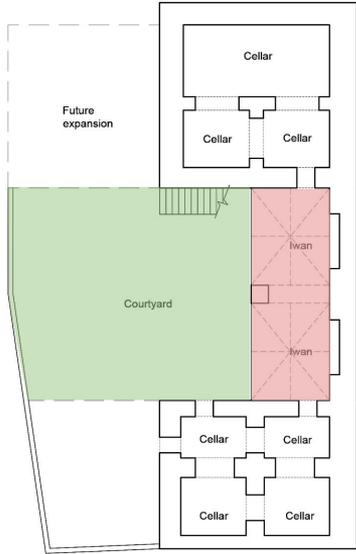
Typical Section



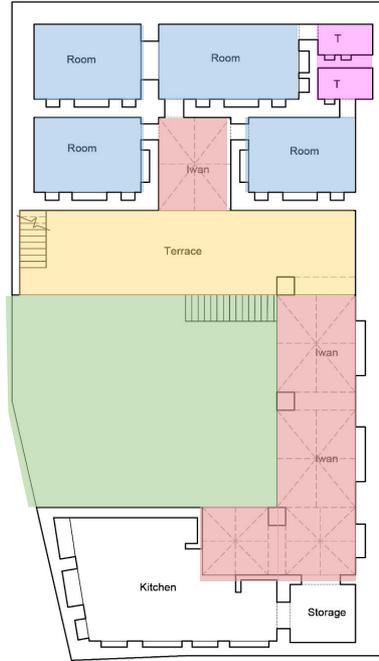
Wall Section



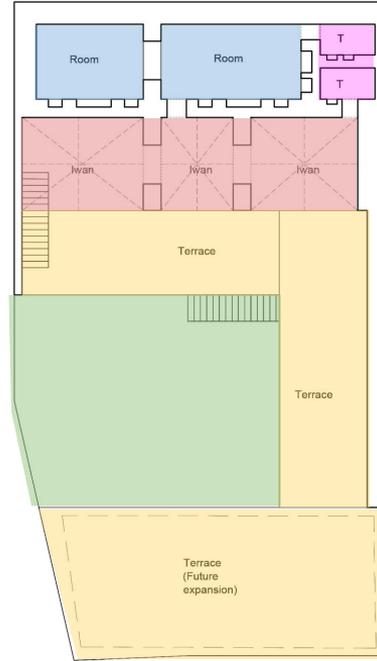
BASIC NEEDS



Ground Floor Plan



First Floor Plan



Second Floor Plan

The modular vocabulary of Mardin house consists of three types of spaces: **open, semi-open and closed spaces.**

Therefore the house grows primarily by adding a **semi-open space (eyvan) and a closed space (room).**

In the center of a house there is a semi-open space (eyvan) which serves as a living and a circulation area. **Iwan serve as buffer zones both for climatic reasons and to support privacy.** Closed spaces are the rooms that have kitchen, living space, workshop and bedroom functions.

There are three types of semi-open spaces which have different names (eyvan, revak, kosk) according to their relations with other spaces. **Semi-open spaces are the main vocabulary of Mardin architecture.** Mostly they are open on the south site overlooking the valley.

The inclination of the site and orientation toward the valley and south are dominant factors for the configuration of Mardin Architecture. The houses are oriented **without blocking each others view, sun and wind.**

On the **ground floor usually common spaces** are found related to an eyvan or a courtyard. **Kitchen, living room, workshops and service spaces** are the main functions. On the **upper floors private spaces, bedrooms exist** which were also connected with eyvans and terraces.

-  Toilet
-  Rooms
-  Iwans
-  Terraces
-  Courtyard

NEEDS FOR PRIVACY



- Private | women
- Private | men
- Public

Housing styles is determined by tradition, family structure, environment, local building materials, and income. There is considerable variety in external appearance by region.

Most homes are divided in a **selamlık** (a public reception room) and a **harem** (private family quarters). In traditional households, male guests are confined to the **selamlık**, where they converse with the male members of the household, while women stay in the **harem**. Many traditional homes also have an enclosed garden or courtyard where females can perform some of their domestic duties and chat with neighbors.

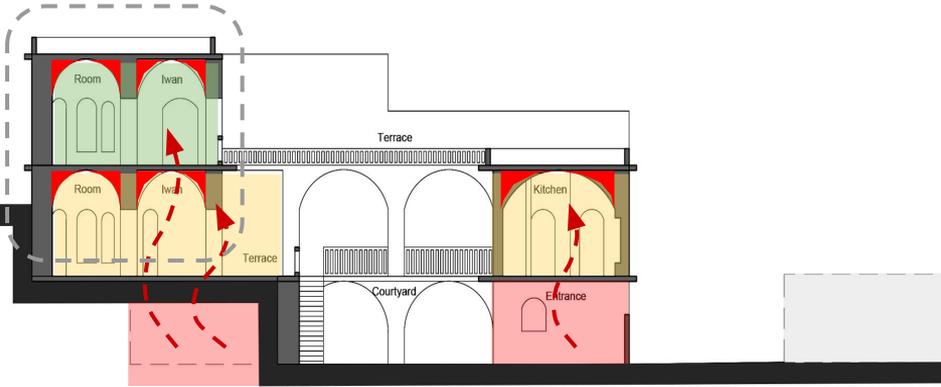
In small towns and villages, **males dominate public space** while **females dominate the private space** of the home.

In the mosque, **females pray in an area apart from and outside the view of males.**

DESIGN STRATEGIES

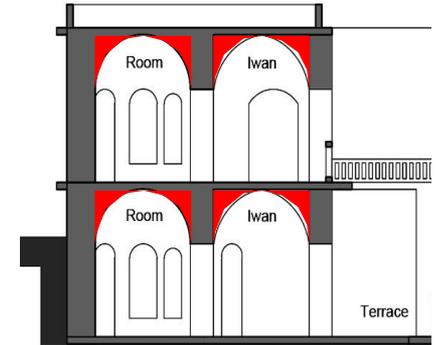
Using soil between the vault and flooring as insulation material

The closed spaces were crossed with vaults, where stone was used as the main structural material. The vaults, which were built with coarse and rubble stones, were compacted with soil, and their surfaces were plastered with coarsely spread mortar. Between the flat floors that form the floor of the upper floor and the vaults covering the lower floor, earth was placed as a filling material. Soil filling material causes heat delay and serves as heat insulation. It was observed that the soil was used as filling material in all the buildings examined.

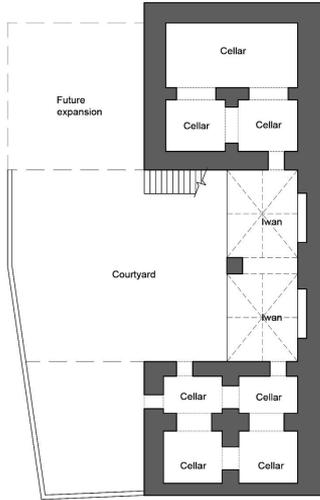


Use of animal heat

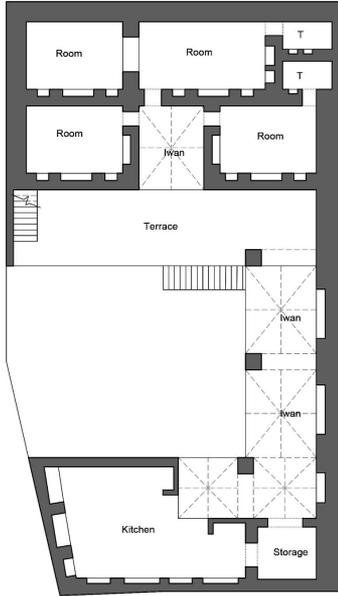
In Mardin traditional houses, stables are usually located on the lowest floor of the buildings. In all the three buildings, the barn is located on the ground floors of the dwellings. In addition, the warmth of the animals living in the stables results in a natural heat source. This causes an increase in the environmental temperature. It is believed that the heat increase caused by all of these factors in the stables contributes to the (horizontal and vertical) heating of the neighboring spaces in winter.



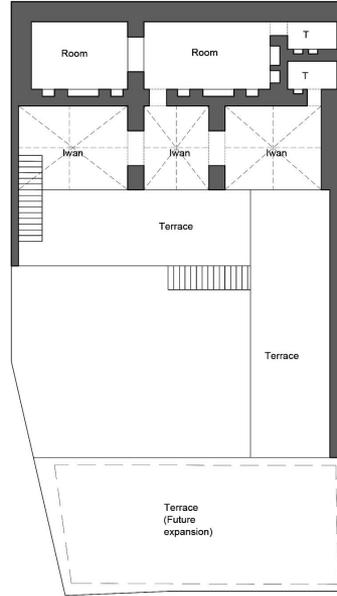
High thermal mass



Ground Floor Plan



First Floor Plan



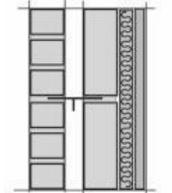
Second Floor Plan

In traditional Mardin houses, the cross-sections of the walls, which act as carriers in the houses examined, were between 70 and 150 cm thick. The thickness of the walls provided heat delays due to the high thermal mass property of the buildings, where the thicker the mass is, the longer the time lag is. Since the building shell acted as a bridge between the external environmental conditions and the buildings, user comfort conditions inside the buildings increased due to the high insulation property of the materials used in the building shell.

In the proposed design, **cavity walls** are used to provide for insulation. It uses lesser construction materials and makes the building lighter at the same time taking care of the extreme climate.

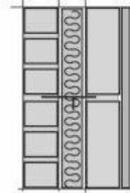
The execution of cavity walls can be implemented in 3 distinct manner keeping in mind the requirements of the internal partitions for the various spaces. This will help us achieve the high thermal mass to satisfy the requirements.

Clear cavity



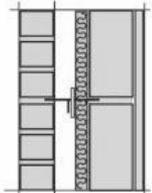
103mm facing brick
50mm clear cavity
100mm aerated block
40mm thermal board

Filled cavity



103mm facing brick
75mm cavity batts
100mm aerated block
any plaster finish

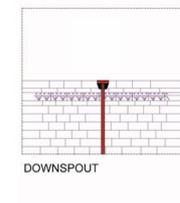
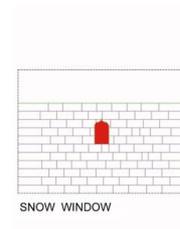
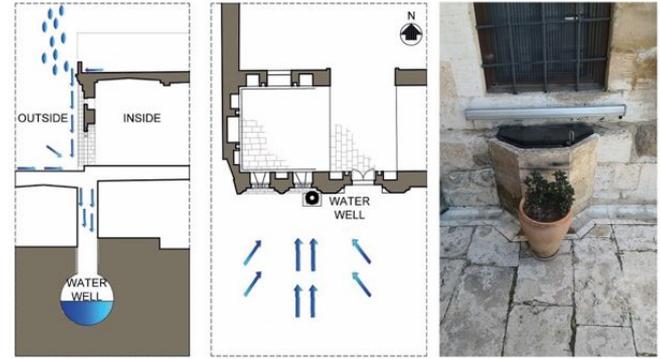
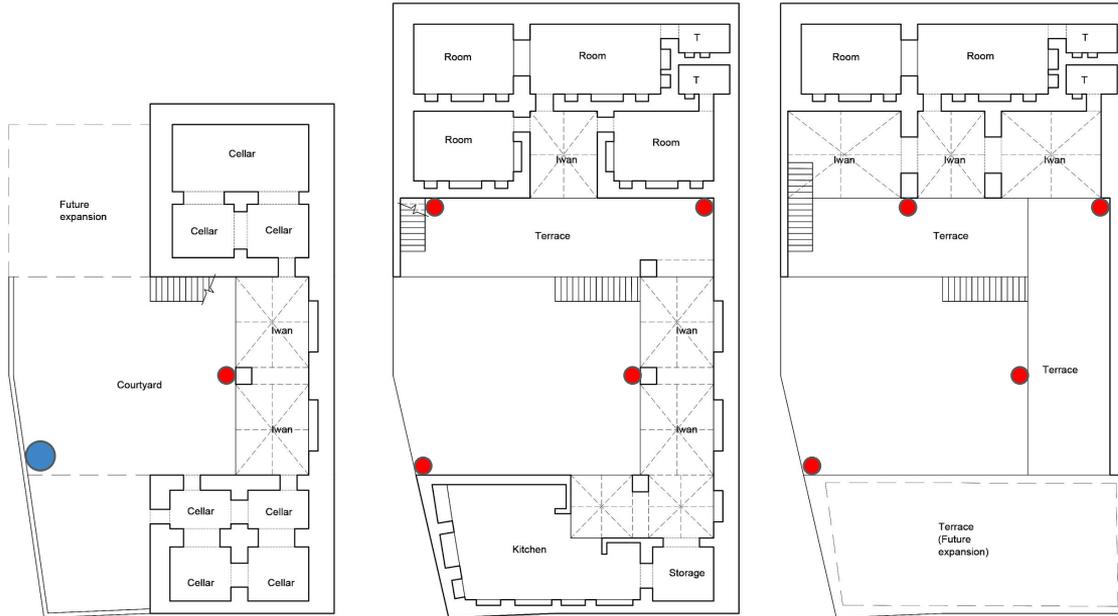
Partial cavity



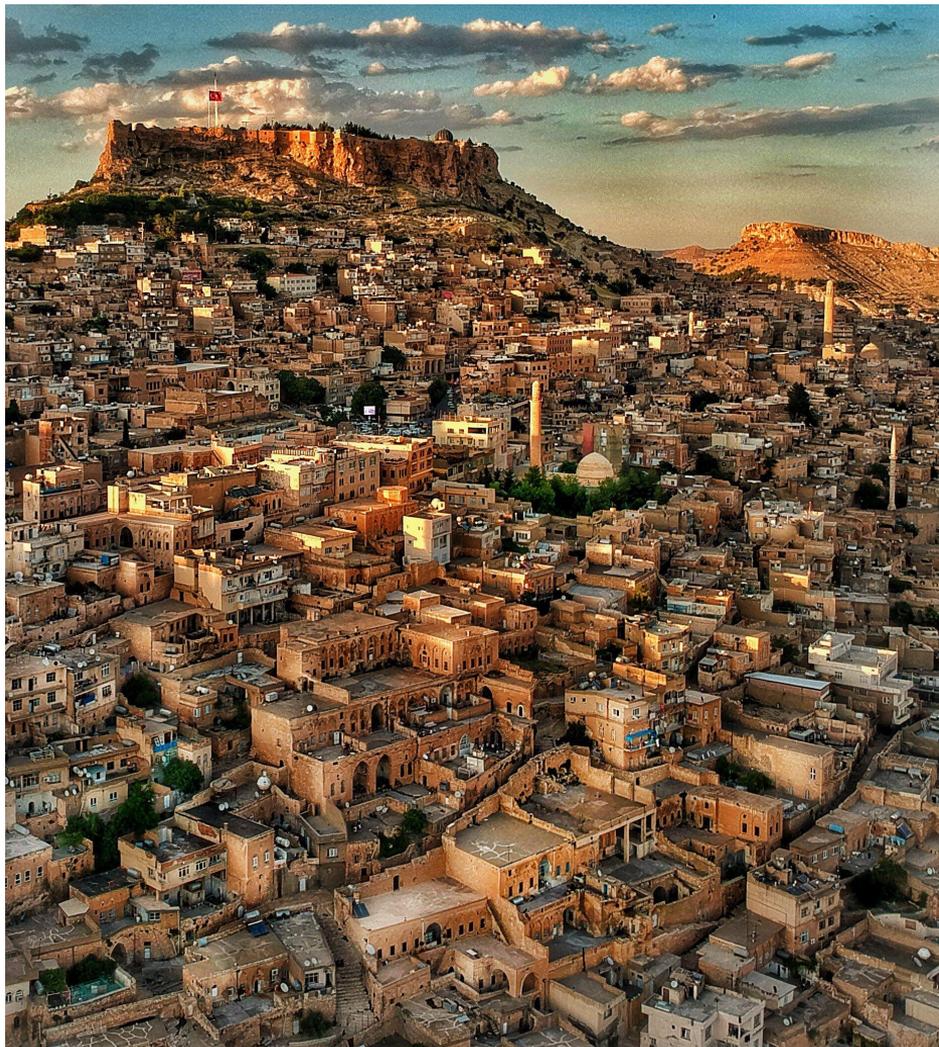
103mm facing brick
25mm cavity board
125mm aerated block
any plaster finish

Storage of precipitation in water wells

In traditional Mardin residences, water is stored in wells located at the bottom of the buildings, and the water storage techniques used depend on the type of rainfall. Rainfall in the form of snow is transferred to the floor through snow windows before reaching the wells and being stored. Meanwhile, rainfall that has turned into liquid is transferred to the water wells by means of gargles, which have a water collection system and vary in size according to the amount of water they carry to protect the building from unwanted water effects. The water stored in the water wells meets the daily water requirement of the users during the four seasons



- Water well
- Downspout



CONCLUSION

The research was aimed at understanding the traditional architecture of Mardin. The materials, spaces, socio-cultural hierarchies were understood. The study allowed us to understand the implications of Post-Industrialism and the residential growth that was seen across the specific area of Mardin for the more it help in an evolution of the design ideologies that was seen across the city.

The design process stems from keeping in mind the modern technological advances as well as the traditional and socio-cultural determinants and practices followed by the indigenous people in the city of Mardin.

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